K070927

HemosIL D-Dimer HS
510(k) Summary (Summary of Safety and Effectiveness)

SEP 17 2007

Applicant Contact Information:

Applicant:	Instrumentation Laboratory Co.
Address:	113 Hartwell Avenue Lexington, MA 02421
Contact Person:	Carol Marble, Regulatory Affairs Director
Phone Number:	781-861-4467
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Preparation Date: August 13, 2007

Device Trade Name:

HemosIL D-Dimer HS

Regulatory Information:

Classification Name:	Fibrinogen and Fibrin Split Products, Antigen, Antiserum, Control
Device Class:	Class II
Regulation No.:	864.7320
Product Code:	DAP
Panel:	Hematology

Predicate Device:

K040882	Biomerieux Vidas® D-Dimer Exclusion Assay

Device Intended Use:

HemosIL D-Dimer HS is an automated latex enhanced immunoassay for the quantitative determination of D-Dimer in human citrated plasma on the ACL TOP for use in conjunction with a clinical pretest probability (PTP) assessment model to exclude venous thromboembolism (VTE) in outpatients suspected of deep venous thrombosis (DVT) and pulmonary embolism (PE).

Device Description:

The D-Dimer HS Latex Reagent is a suspension of polystyrene latex particles of uniform size coated with the $F(ab')_2$ fragment of a monoclonal antibody highly specific for the D-Dimer domain included in fibrin soluble derivatives. The use of the $F(ab')_2$ fragment allows a more specific D-Dimer detection avoiding the interference of some endogenous factors like the Rheumatoid Factor. When a plasma containing D-Dimer is mixed with the Latex Reagent and the Reaction Buffer included in the D-Dimer HS kit, the coated latex particles agglutinate. The degree of agglutination is directly proportional to the concentration of D-Dimer in the sample and is determined by measuring the decrease of the transmitted light caused by the aggregates (turbidimetric immunoassay).

Technological Characteristic Summary:

The HemosIL D-Dimer HS assay is equivalent to the currently marketed HemosIL D-Dimer HS assay, except for the Intended Use. For purposes of the Intended Use expansion, we also claim equivalence to the Biomerieux Vidas® D-Dimer Exclusion Assay, cleared under K040882.

Substantial Equivalence Comparison Table:

Characteristic	Modified Device: HemosIL D-Dimer HS	Predicate Device: HemosIL D-Dimer HS (K050544)	Predicate Device: Biomerieux Vidas® D-Dimer Exclusion Assay (K040882)
Indications for use	HemosIL D-Dimer HS is an automated latex enhanced immunoassay for the quantitative determination of D-Dimer in human citrated plasma on the ACL TOP for use in conjunction with a clinical pretest probability (PTP) assessment model to exclude venous thromboembolism (VTE) [deep venous thrombosis (DVT) and pulmonary embolism (PE)].	HemosIL D-Dimer HS is an automated latex enhanced immunoassay for the quantitative determination of D-Dimer in human citrated plasma on the ACL TOP as an aid in the diagnosis of venous thromboembolism (VTE) [deep venous thrombosis (DVT) and pulmonary embolism (PE)].	For use in conjunction with a clinical Pre-test Probability (PTP) assessment model to exclude deep venous thrombosis (DVT) and pulmonary embolism (PE) in outpatients suspected of DVT and PE.
Assay principle	Same as K050544	Latex-enhanced immunoturbidmetric assay	Two-step enzyme immunoassay sandwich method with a final fluorescent detection.
Instrument	Same as K050544	ACL TOP instruments	VIDAS instruments
Sample type	Same as K050544	Citrated plasma	Citrated plasma
Calibrator	Same as K050544	D-Dimer Calibrator	DD2 Calibrators
Quality Control	Same as K050544	HemosIL D-Dimer Controls (High & Low)	DD2 Controls

Substantial Equivalence Comparison Table (Cont.):

Characteristic	Modified Device: HemosIL D-Dimer HS	Predicate Device: HemosIL D-Dimer HS (K050544)	Predicate Device: Biomerieux Vidas® D-Dimer Exclusion Assay (K040882)
Measuring Range	Same as K050544	150 - 69000 ng/mL with automatic rerun	45 - 10000 ng/mL (FEU)
Detection Limit	Same as K050544	21 ng/mL	45 ng/mL (FEU)
Within-run Precision (% CV)	Same as K050544	• 8.3% at 180 ng/mL • 3.7% at 314 ng/mL • 2.0% at 677 ng/mL	• 5.0% at 264 ng/mL (FEU) • 3.9% at 549 ng/mL (FEU) • 5.3% at 7283 ng/mL (FEU)
Total Precision (% CV)	Same as K050544	• 11.0% at 180 ng/mL • 7.0% at 314 ng/mL • 7.0% at 677 ng/mL	• 5.7% at 264 ng/mL (FEU) • 5.8% at 549 ng/mL (FEU) • 7.1% at 7283 ng/mL (FEU)
Interferences	Same as K050544	• Hemoglobin up to 500 mg/dL • Bilirubin up to 18 mg/dL • Triglycerides up to 1327 mg/dL • FDP up to 10 µg/mL • Rheumatoid Factor up to 1400 UI/mL	None of the following factors have been found to significantly influence this assay: hemolysis, lipemia, bilirubinemia, rheumatoid factor. It is recommended not to use samples that appear to be clearly hemolyzed, lipemic, or icteric.
Clinical Cut-off	Same as K050544	230 ng/mL	500 ng/mL (FEU)

Performance Data:

A multi-center management study was performed at four hospitals on 668 samples from patients admitted consecutively to the emergency unit with suspected DVT or PE. 307 patients were suspected of DVT and 361 patients were suspected of PE. As part of the study, patients underwent a PTP (pretest probability) assessment using the Wells model and were classified as having a high, moderate, or low probability of DVT or PE. Patients with a negative D-Dimer test result and a low PTP score underwent no further diagnostic testing and were followed-up after 3 months for development of DVT or PE. For patients with a negative D-Dimer test result and a moderate PTP, it was the physician's decision whether to follow-up after 3 months or to undergo imaging techniques. Patients with a positive D-Dimer test result or a high PTP score underwent imaging techniques.

The overall prevalence of DVT in the total population of samples was 20.2% (62/307). The overall prevalence of PE in the total population of samples was 16.1% (58/361). As of the 3 month follow-up, none of the patients that were negative through D-Dimer testing had developed DVT or PE.

The sensitivity, specificity and negative predictive value (NPV) of HemosIL D-Dimer HS for DVT and PE using the previously established clinical cut-off of 230 ng/mL is summarized below with the corresponding 95% confidence intervals (CI):

DVT Performance	All samples	High PTP	Low + Moderate PTP
n	307	54	253
Sensitivity	100.0% (62/62) (94.2%-100.0%)	100.0% (28/28) (87.7%-100.0%)	100.0% (34/34) (89.7%-100.0%)
Specificity	38.4% (94/245) (32.2%-44.8%)	34.6% (9/26) (17.2%-55.7%)	38.8% (85/219) (32.3%-45.6%)
Negative Predictive value	100.0% (94/94) (96.2%-100.0%)	100.0% (9/9) (66.4%-100.0%)	100.0% (85/85) (95.8%-100.0)
Positive Predictive value	29.1% (62/213) (23.1%-35.7%)	62.2% (28/45) (46.5%-76.2%)	20.2% (34/168) (14.4%-27.1%)
Prevalence	20.2% (62/307) (15.8%-25.1%)	51.9% (28/54) (37.8%-65.7%)	13.4% (34/253) (9.5%-18.3%)

PE Performance	All samples	High PTP	Low + Moderate PTP
n	361	28	333
Sensitivity	100.0% (58/58) (93.8%-100.0%)	100.0% (10/10) (69.2%-100.0%)	100.0% (48/48) (92.6%-100.0%)
Specificity	35.6% (108/303) (30.2%-41.3%)	16.7% (3/18) (3.6%-41.4%)	36.8% (105/285) (31.2%-42.7%)
Negative Predictive value	100.0% (108/108) (96.6%-100.0%)	100.0% (3/3) (29.2%-100.0%)	100.0% (105/105) (96.5%-100.0%)
Positive Predictive value	22.9% (58/253) (17.9%-28.6%)	40.0% (10/25) (21.1%-61.3%)	21.1% (48/228) (15.9%-26.9%)
Prevalence	16.1% (58/361) (12.4%-20.3%)	35.7% (10/28) (18.6%-55.9%)	14.4% (48/333) (10.8%-18.7%)

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Food and Drug Administration
2098 Gaither Road
Rockville MD 20850

SEP 17 2007

Carol Marble
Regulatory Affairs Director
Instrumentation Laboratory Company
113 Hartwell Avenue
Lexington, Massachusetts 02421

Re: k070927
Trade/Device Name: HemosIL D-Dimer HS
Regulation Number: 21 CFR 864.7320
Regulation Name: Fibrinogen/Fibrin Degradation Product Assay
Regulatory Class: Class II
Product Code: DAP
Dated: March 30, 2007
Received: April 3, 2007

Dear Ms. Marble:

We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act) that do not require approval of a premarket approval application (PMA). You may, therefore, market the device, subject to the general controls provisions of the Act. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration.

If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to such additional controls. Existing major regulations affecting your device can be found in Title 21, Code of Federal Regulations (CFR), Parts 800 to 895. In addition, FDA may publish further announcements concerning your device in the Federal Register.

Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the Act's requirements, including, but not limited to: registration and listing (21 CFR Part 807); labeling (21 CFR Parts 801 and 809); and good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820). This letter will allow you to begin marketing your device as described in your Section 510(k) premarket

notification. The FDA finding of substantial equivalence of your device to a legally marketed predicate device results in a classification for your device and thus, permits your device to proceed to the market.

If you desire specific advice for your device on our labeling regulation (21 CFR Part 801), please contact the Office of In Vitro Diagnostic Device Evaluation and Safety at (240) 276-0450. Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21CFR Part 807.97). For questions regarding postmarket surveillance, please contact CDRH's Office of Surveillance and Biometric's (OSB's) Division of Postmarket Surveillance at (240) 276-3474. For questions regarding the reporting of device adverse events (Medical Device Reporting (MDR)), please contact the Division of Surveillance Systems at (240) 276-3464. You may obtain other general information on your responsibilities under the Act from the Division of Small Manufacturers, International and Consumer Assistance at its toll-free number (800) 638-2041 or (240) 276-3150 or at its Internet address http://www.fda.gov/cdrh/industry/support/index.html.

Sincerely yours,

Robert L. Becker, M.D., Ph.D.
Director
Division of Immunology and Hematology
Office of *In Vitro* Diagnostic Device Evaluation and Safety
Center for Devices and Radiological Health

Enclosure

cc: HFZ-401 DMC
HFZ-404 510(k) Staff
HFZ- Division
D.O.

Indications for Use Statement

510(k) Number (if known): K070927

Device Name: HemosIL D-Dimer HS

Indications for Use:

HemosIL D-Dimer HS is an automated latex enhanced immunoassay for the quantitative determination of D-Dimer in human citrated plasma on the ACL TOP for use in conjunction with a clinical pretest probability (PTP) assessment model to exclude venous thromboembolism (VTE) in outpatients suspected of deep venous thrombosis (DVT) and pulmonary embolism (PE).

For *in vitro* diagnostic use.

Prescription Use ___√___	AND/OR	Over-The-Counter Use _____
(Part 21 CFR 801 Subpart D)		(21 CFR 801 Subpart C)

(PLEASE DO NOT WRITE BELOW THIS LINE - CONTINUE ON ANOTHER PAGE IF NEEDED)

Concurrence of CDRH, Office of In Vitro Diagnostic Devices (OIVD)

Division Sign-Off

Office of In Vitro Diagnostic Device Evaluation and Safety

510(k) K070927